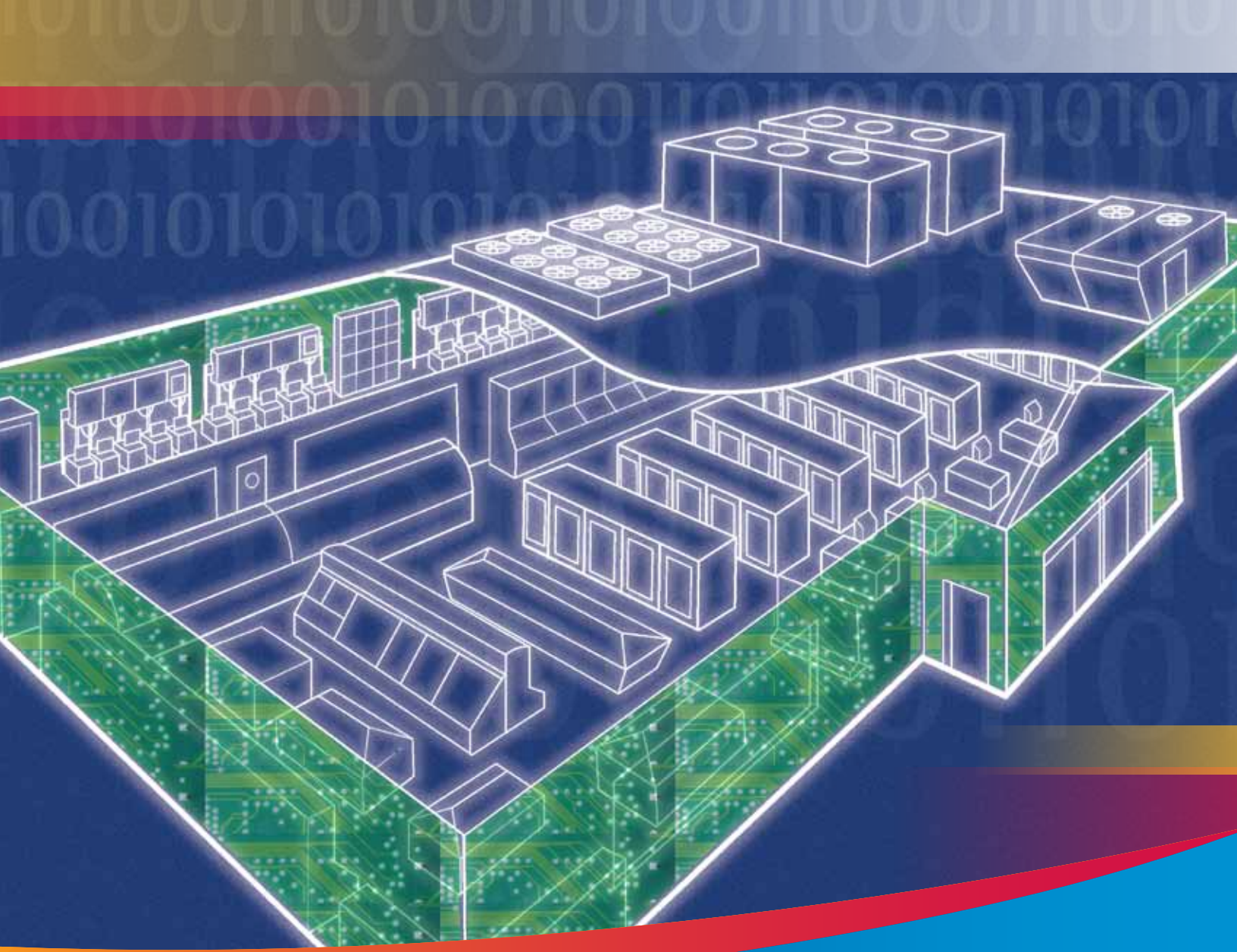

Supermarket Solutions

EMERSON™
Climate Technologies

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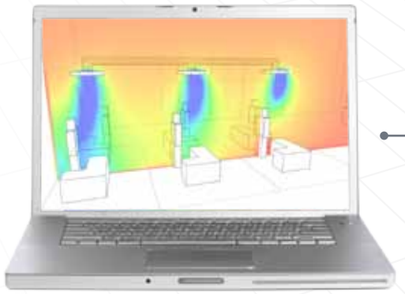

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Emerson's Intelligent Store®

The typical 100-store supermarket enterprise spends $38 million each year on energy, maintenance, labor and refrigerant. Developing and sustaining enterprise-wide operational improvements is a continuous process that demands time, resources and expertise. Emerson helps retailers address these challenges by providing a full spectrum of solutions derived from years of experience optimizing retailers' facilities with customized energy and maintenance initiatives. Emerson's Intelligent Store® is comprised of hardware, services and best practices that measure, manage, optimize and sustain operational cost savings across the supermarket.

Control and Policy Enforcement
Without proper monitoring and control systems in place, facility improvement initiatives deteriorate and savings diminish. Emerson's offerings provide retailers continuous insight into equipment performance and energy expenditure to optimize store conditions.

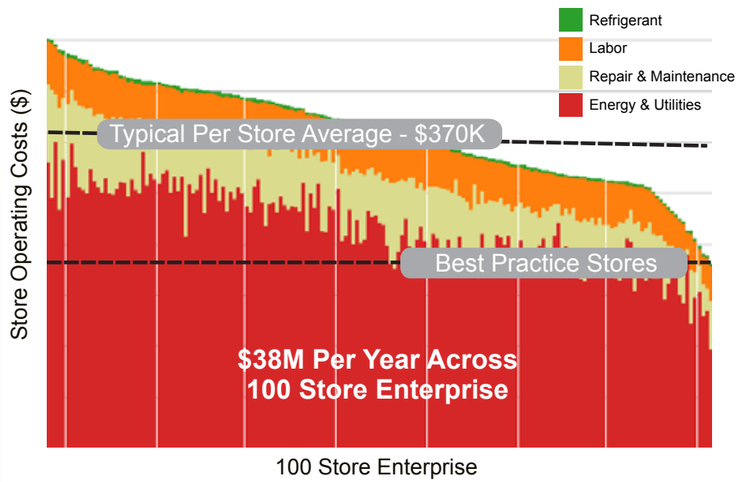
Efficient Equipment For Eco-Friendly Practices
Emerson's Intelligent Store hardware is engineered for optimal efficiency in performance and energy reduction. Built-in communication capabilities allow components to be remotely managed from the E2 central supervisory controller. The E2's remote communication abilities facilitate automatic data collection, alarm receiving, multi-setpoint changes and security safeguards.

Monitoring, Metrics and Performance Assessment
Emerson's ProAct™ Service Center remotely processes, triages and resolves alarms around the clock. Real-time performance assessment provides timely information on energy expenditure, maintenance costs, refrigerant leaks and shrink causes. Systematic measurement of these cost drivers provides a powerful basis for everyday decision making by allowing retailers to quickly identify opportunities for operational improvement.

Design/Retrofit for Energy Efficiency
Emerson's design and commissioning services lay the groundwork for efficient facility performance. Emerson has applied superior supermarket industry experience in commissioning thousands of facilities around the world. Customized approaches targeting energy, construction, HVAC and facility conditions reduce operational costs. Our design engineers view sustainable building design as a collaborated effort, taking into consideration both the architect and the client's vision to design a building that is energy efficient, cost effective and environmentally responsible.

Strategies for Energy and Sustainability
Implementing strategies to reduce energy consumption and control refrigerant achieves greater cost savings. Emerson provides sustainable solutions through energy efficient facility control and refrigerant leak detection systems. Energy-related carbon emission tracking allows retailers to establish enterprise-wide sustainability guidelines, comply with increasing legislative demands and take advantage of federal incentives.

Opportunities for Cost Reductions



The information above is derived from supermarket industry data and aggregated customer operating profiles.

A comprehensive integration of best practices for supermarkets.

Supermarket Infrastructure Solutions

A Supermarket incurs over $500K annually in operational expenses related to energy, maintenance and food loss.

Emerson's facility controllers are designed to optimize the performance of refrigeration, HVAC, building and environmental infrastructure using sophisticated control algorithms built into over 20 different applications. By ensuring that store fixtures maintain consistent temperatures, Emerson's E2 controllers minimize product shrink and preserve food quality. The E2 also enables integration with monitoring and remote service offerings designed to further reduce operational costs.

80%of all compressor failures could be avoided with regular maintenance and proper diagnosis.

CoreSense™ is an electronics platform that uses the compressor as a sensor to monitor, assimilate and interpret system and electrical information within the compressor. Using proprietary algorithms, CoreSense electronics modules unlock advanced communication, diagnostics and performance capabilities to enhance system performance. CoreSense technology delivers more information, enhanced reliability and increased savings.

In refrigeration applications, precise temperature control is critical to maintaining food quality and minimizing energy consumption.

Emerson's Discus Digital™ compressors use digital modulation technology to significantly reduce compressor cycles, tighten temperature control and minimize the amount of energy consumed by refrigeration systems. By controlling the time when actual compression is taking place, the capacity output of the compressor can be infinitely adjusted from 10 to 100 percent. This new approach to capacity control is more efficient and reliable than other modulation methods, thus leading to greater energy savings.

Supermarket operators need a way to reduce energy consumed by HVAC units while maintaining building comfort levels.

Emerson's variable speed drives intelligently modulate roof-top HVAC fan motors to reduce air handler fan speeds and air volumes whenever peak consumption is not required. This method can reduce rooftop HVAC fan motors' energy consumption by up to 52 percent on HVAC.

HVAC motors with snugly fitting belts consume far less energy than belts that are not properly fitted.

Emerson's Browning belts and sheaves include the most extensive collection of V-Belt Drives and Mounted Bearings available anywhere, which means motors can be assured an accurate fit. Emerson's Browning belts and sheaves also contain features that offer customers excellent performance and long life.

When the store closes and customers are no longer opening refrigerated cases to release cold air, it's not cost effective to maintain the same energy output to control the temperature.

Emerson's XR series controllers manages fan, defrost and refrigeration cycles for medium and low temperature refrigerated case applications. The controllers can reduce energy consumption during off hours using a night setback mode and deliver smarter compressor cycling through direct temperature control algorithms. The onboard keypad allows parameter changes to be completed directly at the controller, and can be locked out for security purposes. Connectivity to Emerson's E2 supervisory controller provides alarm notifications as well as historical case temperature graphs to assist technicians in troubleshooting.

Refrigerated cases with glass doors need anti-condensate heaters to prevent fog from blocking product display, but heaters that run constantly consume a large amount of energy.

Emerson's ACC dynamically optimizes anti-condensate heater output to maintain glass door frames at the minimum level above dewpoint. Using this method, the device can deliver up to 70 percent greater energy savings than other controllers that rely on dewpoint alone.

Emerson's XEV valve driver improves system efficiency by maintaining superheat at an optimized setting.

The XEV regulates refrigerant flow in response to temperature and pressure sensor readings to maximize performance. A fast recovery algorithm corrects superheat problems more rapidly than traditional systems after verifying a superheat anomaly.

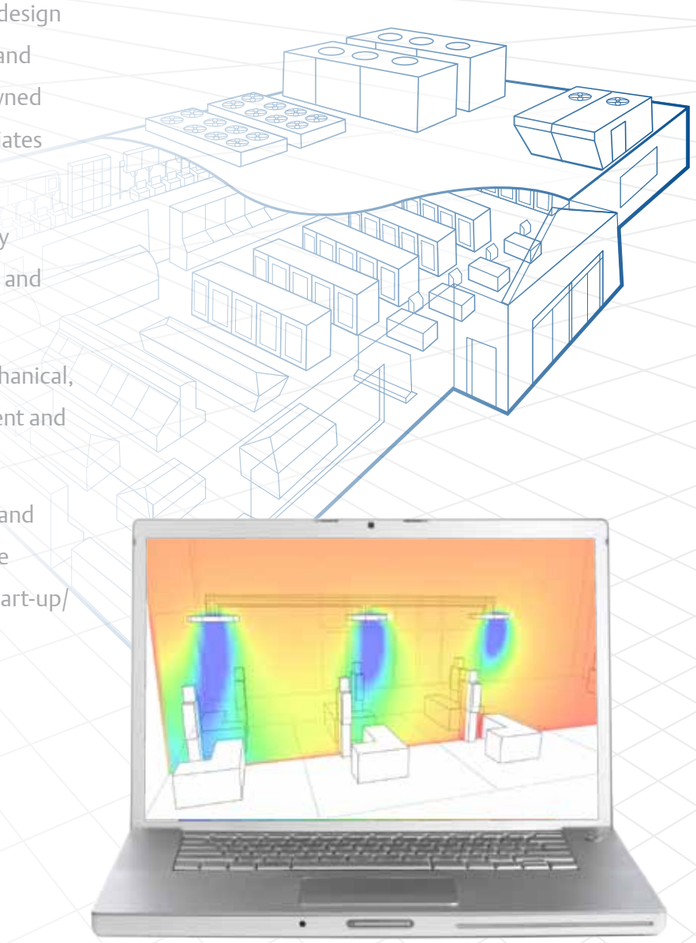
Compressors that simply turn on and off cannot perform efficiently while meeting varying cooling needs throughout the day.

HVAC systems use up to 35 percent of all electricity consumed in the U.S., and compressors are responsible for the majority of this consumption. The Copeland Scroll® Digital™ uses digital modulation technology to reduce operating costs through efficient performance and precise temperature/humidity control. The infinite capacity range between 10 and 100 percent enhances system reliability by eliminating the constant start/stop modulating patterns that lead to wear and tear.

Design Services

Emerson offers customers complete facility design services for retail, commercial, institutional and data center facilities through its world renowned engineering practice, Clive Samuels & Associates (CSA). CSA offers:

- CONSULTATIVE SERVICES, including energy analysis and modeling, carbon compliance and project management
- DESIGN SERVICES, including building mechanical, electrical, refrigeration, energy management and plumbing/fire protection systems
- OTHER SERVICES, including facility audits and building system assessments, due diligence reports, energy benchmarking , systems start-up/ optimization, and LEED commissioning



Energy Modeling

Sustainable Building Design

As the world becomes more aware of the need for energy conservation and sustainable building design, CSA is in a unique position - ready to provide rigorously designed environmental concepts and LEED advocacy for forward thinking clients in the United States and around the globe.

Using sophisticated Building Information Modeling (BIM), CSA engineers begin the process of studying building performance and cost benefits by building a three-dimensional model (Revit™) of the architecture. Physical characteristics of building materials can then be added, as well as local environmental conditions and site orientation. This provides a real life platform from which the entire design team can study the impact on various building systems. In addition, the team is able to quantify the performance of each concept and provide comparisons detailing the trade off between initial construction costs, long term building performance, and operating costs.

2D and 3D (Revit) Design

Among the many design elements which can be studied through this methodology are:

- **'U' values for building skin systems**
- **Impact of sun shading and external wind velocity**
- **Impact of glazing technologies and glazing coverage**
- **Impact of refrigeration heat reclaim systems on energy consumption**
- **Water cooled HVAC systems versus direct expansion systems**
- **Water recycling and water efficiency**
- **Air flow from diffuser locations and their temperature gradients**
- **Natural day-lighting**
- **Lighting systems and lighting system controls**
- **Energy performance**
- **Green roofs, solar arrays, geo-thermal, and other sustainable technological strategies**

Design for efficiency.

Commissioning

Emerson's commissioning experts provide the experience and technology retailers need to optimize facilities and enable savings preservation services.

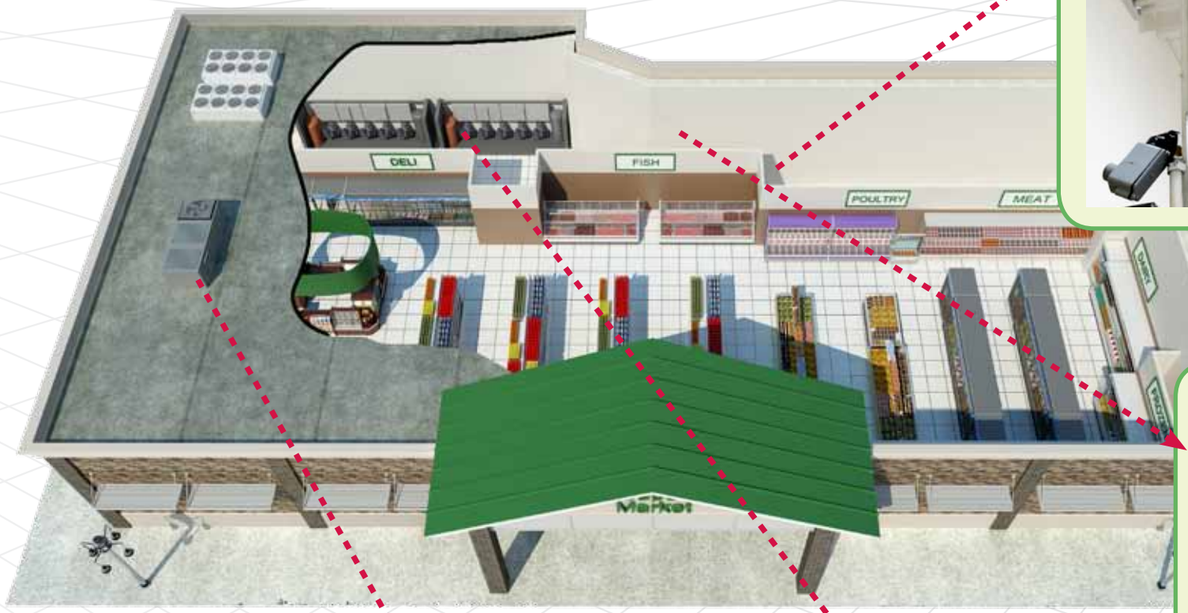
NEW STORES: **Emerson provides N-Commissioning®** to help new stores get on the right track immediately by identifying deficiencies in new store construction. Emerson's experts investigate mechanical, electrical, plumbing, refrigeration, and building control systems in facilities to ensure you obtain the greatest value from your equipment and construction investments. On average, Emerson identifies $20,000-40,000 worth of inefficiencies per inspection.

EXISTING STORES: **Emerson's E-Commissioning®** projects focus on ensuring existing stores are optimized for energy and maintenance efficiency by:

- Uncovering equipment problems that cause excessive energy usage
- Resetting building and equipment controls to optimum setpoints
- Identifying opportunities to further reduce energy consumption
- Detecting maintenance practices that decrease energy efficiency

Emerson's E-Commissioning projects reduce energy spend by 4 to 9 percent in the typical supermarket.

Examples of Typical Deficiencies



Poorly Maintained Equipment

Interior light level sensor hanging from conduit.

Inefficient Equipment

Evaporator coils covered with ice blocking airflow.

Non-Functioning Equipment

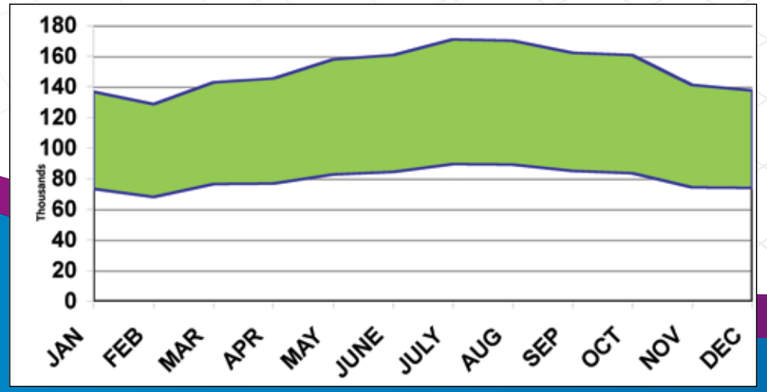
Blower motor variable frequency drive in non-operational "alarm" state.

Poorly Installed Equipment

A drop leg transducer installed in a vertical down position can cause the transducer to log oil and provide inaccurate readings.

Savings based on average customer results. Results may vary.

Emerson E-Commissioning® kWh Savings Analysis



The savings analysis above was created using averaged supermarket customer data over a one year commissioning period.

Optimize facility performance.

Alarm Management

When a refrigerated case is left open or an equipment failure occurs, retailers can lose thousands of dollars worth of perishable products in just hours. Preventing food loss and protecting your customers from food borne illness are critical concerns for retail store operators, but many monitoring methods are not comprehensive and cost effective.

Emerson's remote monitoring service works in conjunction with most control systems to provide customized responses to facility, refrigeration, HVAC and environmental alarm events. Emerson's ProAct™ Service Center, where technicians assess the impact of an alarm, notifies store personnel to ensure conditions are corrected in time. Each event is automatically tracked and recorded to provide insight into historical performance issues at stores with higher alarm rates. This process allows you to target areas prone to problems across your enterprise.

In addition, retailers can eliminate up to 30 percent of service dispatches by opting for root cause analysis by ProAct™ technicians, who then assess event conditions to determine whether it is necessary to notify store personnel. This not only eliminates time spent dealing with non-critical alarms, but also prevents unnecessary and expensive servicing.

2 **Alarm is investigated by ProAct™ Service Center technicians to determine validity**

Non-critical alarms are filtered out and tracked.

3 **Store personnel receives alarm description and real-time condition report indicating appropriate course of action**

Problem is resolved and tracked.

1 **Alarm goes off in the store**

Previously contacted repeat alarms are filtered out and tracked.

Web-Based Alarm Reports Are Generated Automatically:

- Critical Alarm Summary
- Alarm Breakout by Source and Type
- Alarm Average Industry Comparison

Customized responses to building, refrigeration, HVAC and environmental alarm events.

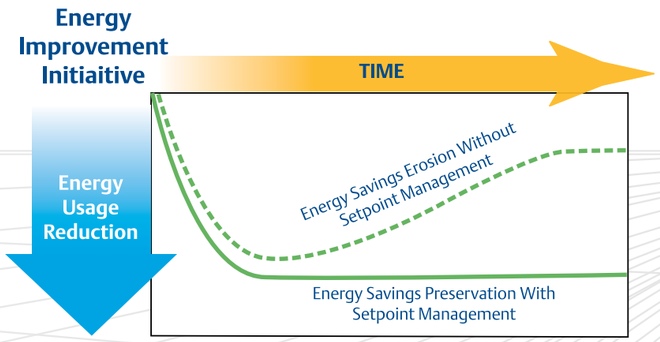
Setpoint Management

Protect Your Energy Improvement Investments

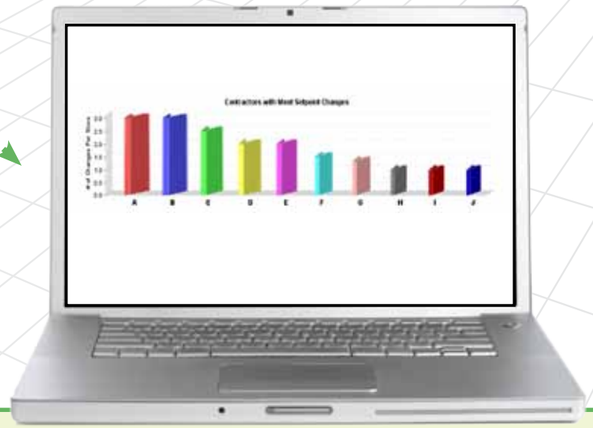
Retailers often watch equipment setpoints return to non-optimized levels as early as six months after initial setup or commissioning, leading to excessive energy consumption and higher operational costs. Emerson has developed a solution to ensure that retailers' energy savings initiatives are sustained in the longterm.

Setpoint Management provides monitoring of setpoint deviations through the ProAct™ Service Center. Changes are tracked over time so that retailers can ensure operational issues are actually fixed rather than masked. This also allows retailers to identify stores with higher change rates to gain insight into service provider performance.

3 **ProAct™ Service Center technicians assess legitimacy of changes and revert setpoint when changes are unnecessary.**



2 **Setpoint changes are recorded to assess energy and maintenance impact.**



1 **Benchmark setpoints are established.**

Web-Based Access To:

Energy Loss Report documents contractor performance by service provider and indicates which contractors' actions cause the greatest expense.

Benefit-Loss Report shows which setpoint changes saved money and which ones cost money.

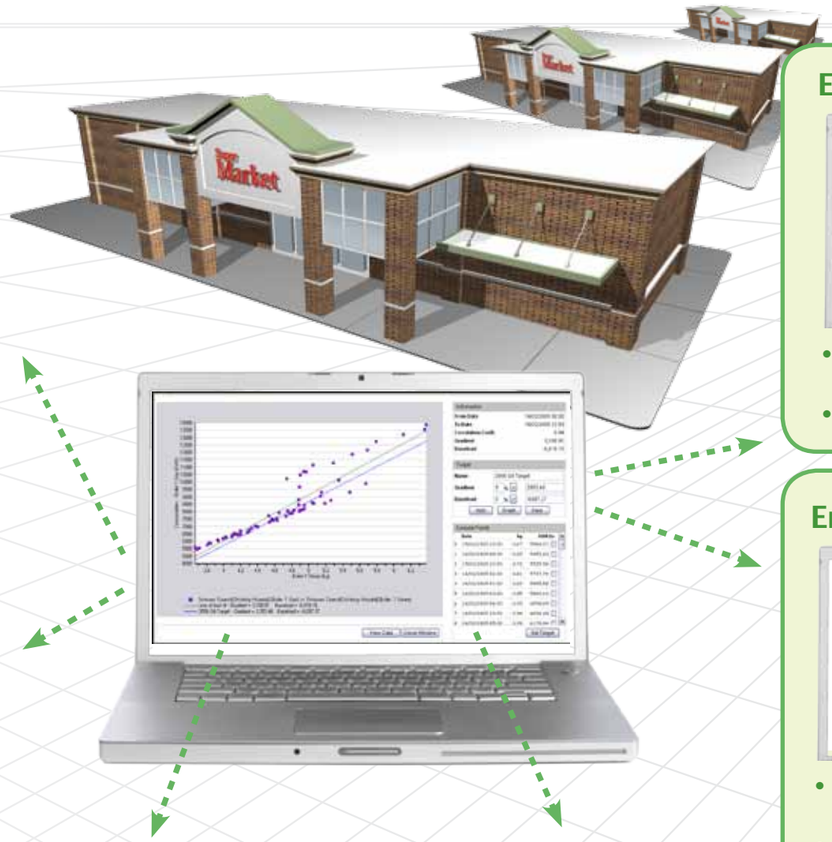
Activity History shows changes challenged by an Emerson energy specialist, changes returned to benchmark and approved changes.

Preserve your energy savings over time.

Energy Monitoring & Targeting Reports

Created on the premise that you must measure asset performance in order to manage it, Emerson's Energy Monitoring & Targeting Reports are generated using meter-level data to model energy performance across an enterprise. This browser-based solution provides energy-usage exception reports based on correlated parameters such as outside temperature, day of week and time of day. The system compares benchmark data to actual usage information from store electricity bills, store main electric meters and individual store electric sub-meters to detect out-of-limits energy usage conditions.

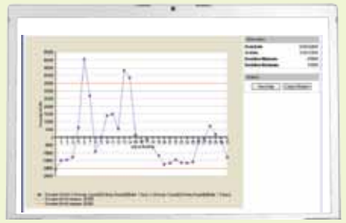
Emerson's ProAct™ Service Center monitors store data in real time to ensure energy consumption stays within set parameters. Performance anomalies trigger notices, warnings or alarms to the facility operator so corrective action can be taken to preserve savings.



Energy/Temperature Analysis and Matrix

- Provide regression analysis across four temperature ranges
- Compare against target or base year
- Show high and low deviations in expected usage

Deviation Analysis



- Details deviation in expected value based on regression analysis
- Offers ability to set automatic notification for high and low alarms

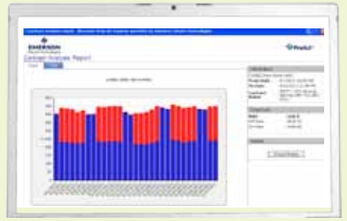
Carbon Footprint

- Compares carbon footprint across sites or individual meters
- Compares against previous year, month and date

Energy Usage Analysis

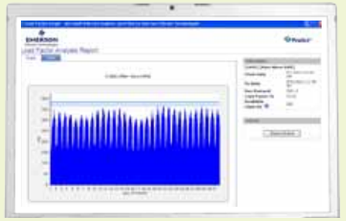
- Shows energy usage across multiple or individual sites
- Provides historical comparison

Energy Cost Analysis



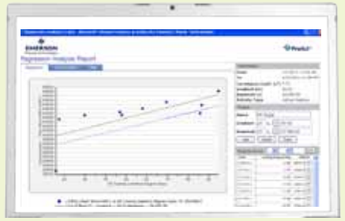
- Shows energy cost across multiple or individual sites
- Provides historical comparison

Load Factor Analysis



- Shows maximum demand and load factor for a range of days

Regression Analysis



- Analyzes energy usage based on a selectable factor such as degree days, outdoor air, CO2, etc.)
- Provides basis for creating energy exceptions and alarms

Real-time operational monitoring eliminates energy waste.

Smart Dispatch

When an equipment alarm or maintenance notice occurs, dispatch decisions are typically based on simple event categorization or contractor terms rather than substantive insights confirming the necessity and severity of the dispatch. Retailers can incur a cost each time a contractor is sent to the site regardless of whether a repair needs to be performed, and the expense can increase when dispatches occur outside service agreement terms.

Emerson's Smart Dispatch service reduces maintenance spend by systematically filtering, triaging and remotely managing alarms through a proprietary process developed by Emerson's industry experts. The service combines Emerson's best practices for alarm management with customized processing rules to fit the business needs of each retailer.

When an alarm or notification occurs, Emerson's ProAct™ Service Center technicians remotely investigate site and equipment conditions and determine the best course of action based upon the customer's business practices. Technicians can remotely resolve, temporarily override, or delay dispatching a contractor in accordance with alarm legitimacy and urgency.

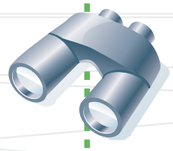
Emerson combined its refrigeration and HVAC expertise with state-of-the-art call center capabilities to create an advanced dispatching system to reduce billable dispatch events 10-15 percent by delaying, deferring and bundling work orders.

Emerson collaborates with you to customize a set of processing rules based on our best practices and your priorities.

Alarms and Calls

Filter Through Optimized Queue: Alarms are systematically triaged using rules.

1



Enter Emerson ProAct™ Service Center

Experienced technicians analyze alarm legitimacy and urgency, then process alarms using the established rules. A diagnosis is made for remote resolution or possible dispatch avoidance.

2

Create Work Order

- **a** Defer maintenance until standard operating hours
- **b** Bundle with other dispatches
- **c** Dispatch immediately

3

Dispatch

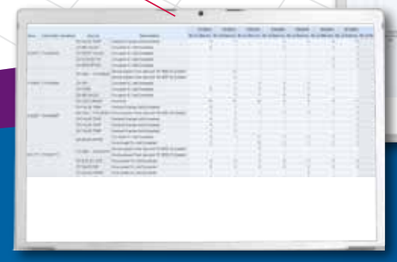
Maintenance Trip and Resolution Verified

Remotely Resolve and Close

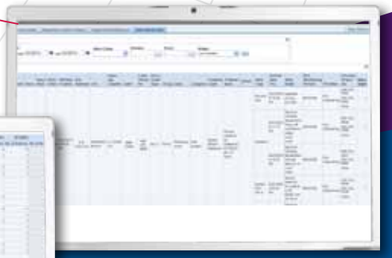
Web Reports

Automated reporting generates metrics and analytics of service requests, dispatches and workflow tasks.

View your total monthly savings from dispatch cost avoidance.



Repeat alarm tracking allows you to monitor equipment health.



Work order metrics categorize spend information and provide visibility into vendor performance.

Demand Response

Shed programs customized to match your operational needs.

Electric power grids often operate close to their capacity limit. Rather than building new power plants to meet growing demand, many utilities have created demand response programs that incent their customers to reduce power usage at times when demand on the grid is high.

Emerson's Demand Response service enables your participation in these programs to earn financial incentives, conserve energy, minimize power interruptions, increase energy reliability and protect the environment. Combine your existing controllers with our intimate knowledge of your energy systems to ensure that each shed is perfectly executed and your operations continue without interruption.

1

Utility Company Requests Energy Shed

2

Analyze Request and Execute Shed

Retailer or CSP initiates shed schedule in ProAct™ Demand Response module. Savings are communicated back to the ProAct™ Service Center, CSP and retailer.

Monitor and Report From Web Browser

Access the Demand Response Monitor data grid via web browser to view:

- Real-time event statuses
- Past and upcoming shed event schedules
- Amount of power shed per site
- Directory summary data

Identify Demand Response Scope and Implement Shed Logic

Energy specialists analyze your enterprise to identify capacity shed potential.

Emerson partners with Curtailment Service Provider (CSP) to incorporate Demand Response Incentives.

Emerson engineers commission each store for Demand Response and program shed logic into existing controllers.

A 5% demand shed could mean a 50% price reduction.

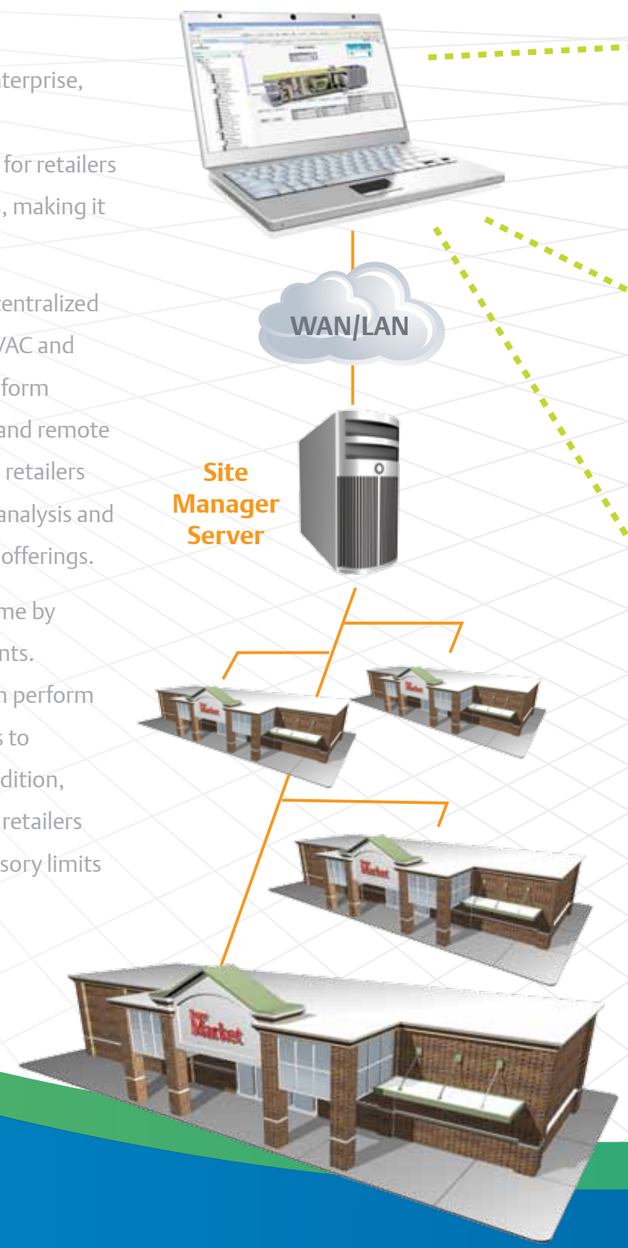
Site Administration

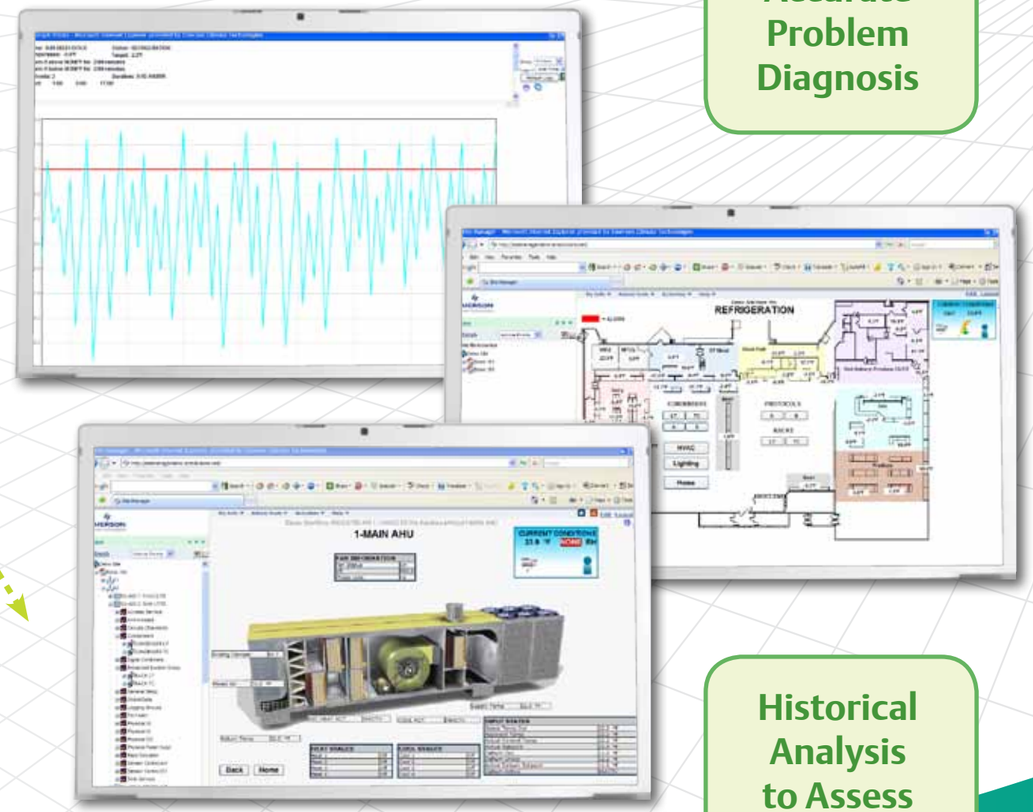
Site Manager

Retailers face numerous challenges in managing their enterprise, from perishable loss prevention to regulation of energy consumption. Emerson has developed a convenient way for retailers to track and respond to facility data across multiple sites, making it easier than ever to achieve operational goals.

Site Manager is a web-based application which enables centralized data collection and real-time views into refrigeration, HVAC and lighting control data at an enterprise level. Users can perform functions such as firmware updates, controller backups and remote application editing. Through centralized data collection, retailers can generate reports, archive facility data for long term analysis and integrate data with other facility management software offerings.

Site Manager's automated broadcast capabilities save time by eliminating the need for individual site-by-site adjustments. Through the Schedule Broadcasting feature, retailers can perform simultaneous enterprise-wide lighting schedule changes to accommodate holidays and other daily exceptions. In addition, Site Manager's Global Setpoint Broadcast feature allows retailers to remotely change application setpoints and some advisory limits simultaneously and from a central point.





Multi Site Control for Maintenance Productivity

Fast and Accurate Problem Diagnosis

Historical Analysis to Assess Store Performance

Emerson-Hosted Service Reduces Total Cost of Ownership

Secure User Management for Access Control

Remotely manage your entire enterprise from a single interface.

Food Quality Reports

Hazard Analysis and Critical Control Points (HACCP) is a food safety methodology which analyzes biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. Many retailers are implementing a HACCP process as a means to ensure the highest standards of freshness for refrigerated products in their stores.

Emerson's Food Quality Reports service (FQR) helps retailers comply with two principles of HACCP: Principle 4 "Establishing monitoring procedures" and Principle 7: "Establish record-keeping and documentation procedures." Performing these tasks manually not only decreases the productivity of employees who could be focusing on other aspects of the business operation, but also poses a greater risk to food safety due to potential for human error. FQR addresses these challenges by eliminating the need for manual temperature checks through automated temperature monitoring and by generating accurate reports which clearly delineate critical threshold breeches.

Retailers can access hourly historical temperature data and graphical status indicators for each selected Critical Control Point (CCP) within their facility. The flexible reporting system can be configured with different critical control limits for each case, product probe or control board to ensure that each type of product is kept at its optimum temperature. Retailers can conveniently access the reports on-demand via a web browser to analyze and verify critical quality indicators.

1 **Customer defines Critical Control Points in each store.**

2 **Product probes record refrigerated case temperatures and communicate the data to the E2.**

Web-based reports are generated hourly showing whether asset was within critical limits.

Automatically monitor and record food temperatures for freshness and safety.

Enhanced Facility Services

Retailers have corporate standards for store HVAC and lighting setpoints and schedules, but variances in customer comfort, store holiday hours and seasonal daylight require occasional adjustments. On-site personnel may not have the ability to make necessary changes without the hassle of calling in a service provider or installing override switches throughout the facility.

With Enhanced Facility Services, Emerson's ProAct™ Service Center technicians provide on-demand, real-time resolution of retailers' requests by initiating a temporary override of facility setpoints to accommodate customer focused issues. Emerson's process allows the flexibility necessary to accommodate changes while protecting corporate energy efficiency settings. When corporate mandates new setpoints, Emerson's technicians make the changes remotely without disrupting store operation.

Work order data is automatically captured in a web-based portal, allowing retailers to identify stores with high change rates and gain insight into store performance and potential service provider issues.

1

Call or email is placed from store requesting a temporary override or schedule change.

2

ProAct™ technician documents request and verifies requestor's authority.

3

ProAct technician connects to site(s) and implements requested changes or temporary bypass.

Web-Based Access to Monthly Service Request Activity Report on web-based reporting infrastructure.

Accommodate variances in store conditions without disrupting corporate settings.

Intelligent Store®

CORESENSE™

DISCUS DIGITAL®

CASE CONTROLS

ANTI-CONDENSATE CONTROLS

VARIABLE SPEED DRIVES

E2 CONTROLS

COPELAND SCROLL®

Field Services

COMMISSIONING SERVICES
Optimize setpoints for reduced energy consumption

DESIGN SERVICES
Design store for operational efficiency

ProAct® Services

ALARM MANAGEMENT
Prevent unexpected down time and food spoilage

ENERGY MONITORING & TARGETING REPORTS
Real time energy consumption analysis and targeting to eliminate energy waste

DEMAND RESPONSE
Participate in demand response utility program and shed appropriate loads

SETPOINT MANAGEMENT
Sustain energy savings obtained through equipment and best practices over long term

SMART DISPATCH
Remotely resolve maintenance issues and eliminate unnecessary dispatches

SITE ADMINISTRATION
Capture real-time refrigeration control data and perform schedule changes at an enterprise level

FOOD QUALITY REPORTS
Automatically monitor and record food temperatures for freshness and safety.

ENHANCED FACILITY SERVICES
Accommodate variances in store conditions without disrupting corporate settings.

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Climate Technologies